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10/580,288	08/30/2006	Liu Sheng	8737-000042/US/NP	5962

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EXAMINER
DOAN, PHUOC HUU

ART UNIT	PAPER NUMBER
2617	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	**Applicant(s)**
Office Action Summary	10/580,288	SHENG ET AL.
	Examiner	**Art Unit**	
	PHUOC H. DOAN	2617	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-35</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1,32 and 33</u> is/are rejected.

7) ☒ Claim(s) <u>2-31,34 and 35</u> is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a) ☐ All   b) ☐ Some * c) ☐ None of:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____.

       3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>05/23/06</u>

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the

basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1, and 32-33 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Kayama (US Pub No: 2003/0095538) in view of Padovani

(US Pub No: 2007/0066320).

As to claim 1, Kayama discloses a method of performing resource allocation

and rate control of Dedicated Channels DCHs for non-realtime data services

in a code division multiple access communication system (page 3, par

[0043], page 8, par [0090] " the transmission packet of information for

which real time characteristics are not required is referred to as a non real

time packet"), wherein said DCHs comprise uplink DCHs and downlink

DCHs (page 8, par [0091] "Fig. 8 with description; and that indicates the

uplink and downlink channel capacity"), and the resource and rate allocation

of the uplink DCH is performed on the basis of that of the downlink DCH

(page 8, par [0087] [0090] "the downlink control channel 6 is taken as the last allocation in associated with the uplink packet channel 207"), the method being characterized by comprising the steps of: a) determining channel states of the downlink DCHs for non realtime data services (page 8, par. [0087] "radio resources by the control signal 6d of the downlink control channel 6 and uses the same slots for transmitting the non real time packets 8"), wherein said DCH channel states include: a blocked state, a macro-diversity state, an available state, an idle state and a frozen state (page 8, par [0090] to page 9, par [0095] "allocates the received power 207; and the received power 271 of the usable radio resources allocated to the users that use for transmitting the non real time packets"); b) determining states of users using said downlink DCHs (page 8 par [0087-0088]), wherein said user states include: an occupying user (page 8, par [0084] "allocated as the priority radio resources to the users"), a common newly-added user, a handover newly-added user, an occupied user, a maintenance user or a macro-diversity user (page 8, par [0084], [0090-0093], page 9, par [0094-0095]); and c) correlating the channel states determined in step a) with the user states determined in step b), and dynamically allocating DCHs with certain rates to the users in the different user states according to a wireless measurement result measured by a current transmission channel (page 3, par

[0042]), based on the priority and fairness requirements (page 3, par [0042-

0043] "transmission rates necessary to transmit the information vary

depending on Quality of Service, for example, the non real time packet

having a long acceptable delay time in packet of transmitted data").

However, Kayama does not show the dedicated channels.

      In the same filed of endeavor, Padovani shows or discloses the

dedicated channel (page 11, par [0099-0101] "forward traffic channel is a

dedicated channel in CDMA frame as described in Fig 4A-G"). Therefore, it

would have been obvious to one of ordinary skill in the art at the time the

invention was made to provide a dedicated channel in order to improve data

rates in frame.

As to claim 32, Kayama further discloses the method according to claim 1,

wherein a result of said wireless measurements comprises a traffic

measurement result (page 9, par [0094] "the radio resource controller 25 sets

the remaining received power as the open radio resources used for

transmitting the non real time packet"), a flow measurement result of a

transmission channel or a channel utilization ratio measurement result (page

10, par [0114] "the receive control signals including periodic timing for

reporting the quantity and receive the allocation of the radio resources,

which is reviewed periodically, and can prevent unnecessary radio resources

being allocated").

As to claim 33, Kayama further discloses the method according to claim 1,

wherein said code division multiple access communication system is a wide

code division multiple access communication system (page 8, par [0090]).

Allowable Subject Matter

3.   Claims 2-31, 34-35 are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form

including all of the limitations of the base claim and any intervening claims.

As to claim 2, the prior art of record does not disclose the method according

to claim 1, wherein the respective DCH channel states in said step a) are

determined as follows: Blocked state: a downlink DCH occupancy timer is

started immediately after a DCH is allocated, and when the timer indicates a

time less than $T.sub.k,min.sup.DL$, no matter how traffic, flow or channel

utilization ratio and other wireless measurements of the DCH changes,

channel resources of the DCH are always blocked and cannot be occupied

by other users; if a DCH is occupied for a time exceeding

$T.sub.k,min.sup.DL$ but within the maximum occupancy time

$T.sub.k,max.sup.DL$, and the traffic, or flow or channel utilization ratio and

other wireless measurements of the DCH is higher than a lower limit

$M.sub.low.sup.DL$, the channel resources will also be blocked; wherein

$T.sub.k,min.sup.DL$ is the minimum occupancy time of the k-th downlink

DCH and $T.sub.k,max.sup.DL$ is the maximum occupancy time of the k-th

downlink DCH, where $T.sub.k,max.sup.DL > T.sub.k,min.sup.DL$; and k

differentiates DCHs with different rates in an order from high to low;

Macro-diversity State: when a user of a DCH in the present cell enters a

macro-diversity state of a soft handover or a softer handover, the DCH

enters the macro-diversity state, and an occupancy timer of a downlink DCH

of the DCH is reset and pauses counting, and the DCH in this state does not

perform a rate control; Available State: when a DCH is occupied for a time

exceeding the maximum occupancy time $T.sub.k,max.sup.DL$, no matter

how the traffic, flow or channel utilization ratio or other wireless

measurements of the DCH varies, the DCH is always in an available state,

that is, it can be occupied by other users; in addition, if a DCH is occupied

for a time exceeding $T.sub.k,min.sup.DL$ but within the maximum

occupancy time $T.sub.k,max.sup.DL$, and the traffic, flow, or channel

utilization ratio or other wireless measurements of the DCH is lower than the

lower limit M.sub.low.sup.DL, the resources of this channel will also be in

an available state; Idle State: a DCH in an idle state is a DCH that is not used

by any user in a current DCH channel set for non-realtime services, which is

generated for the following reasons: a DCH is newly added for the

adjustment of the DCH channel set for non-realtime services; a non-realtime

service user ends a conversation and releases a DCH occupied thereby; a

non-realtime service user performs a handover to other channels and releases

a DCH occupied thereby; or a non-realtime service user performs a handover

to other cells and releases a DCH occupied thereby; Frozen State: after

receiving a downlink DCH resource re-allocation request, all the channels in

a current downlink DCH resource pool are set in a frozen state; as for a DCH

originally in a blocked state, its downlink DCH occupancy timer is paused,

and all the operations of the DCH bandwidth allocation and rate control are

also stopped, but the traffic, flow, or channel utilization ratio or other

wireless measurements of the DCH are still performed; after the downlink

DCH resource re-allocation is completed, the unchanged channels before

and after the re-allocation are immediately restored into a state prior to the

frozen state, and as for the changed DCHs, if a newly-assigned downlink

DCH has a different rate from that of the original downlink DCH, a

downlink DCH occupancy timer of the DCH is reset and the DCH enters a

blocked state; otherwise, it enters the state prior to the frozen state, and the

counting of the downlink DCH occupancy timer is resumed immediately

after the DCH leaves the frozen state.

As to claim 3, the prior art of record does not disclose the method according

to claim 1, wherein further comprising the step of stipulating state transfer

among the respective channel states, comprising: the DCH newly-added for

the re-allocation of the downlink DCH channel set for non-realtime services

entering an idle state, a DCH in a blocked state entering an idle state since a

user thereof ends a conversation and releases the channel, a DCH in an

available state entering an idle state since a user thereof ends a conversation

or performs a handover to other channels and releases the occupied channel,

and a DCH in a macro-diversity state entering an idle state since a user

thereof performs a handover to other cells and releases the occupied channel;

DCHs in idle and available states entering a blocked state for being allocated

to an occupying or newly-added user, and a DCH in a macro-diversity state

entering a blocked state since its user quits the macro-diversity but still stays

in the present cell; a DCH in a blocked state entering an available state when

the channel occupancy time exceeding $T.sub.k,min.sup.DL$, and the traffic,

flow or channel utilization ratio or other wireless measurements of the DCH

is lower than the lower limit M.sub.low.sup.DL, or the channel occupancy

time overruns, i.e., is greater than T.sub.max.sup.DL; DCHs in idle,

available and blocked states may enter macro-diversity state due to the soft

handover or softer handover; and DCHs in idle, blocked, available and

macro-diversity states entering and quitting a frozen state for the re-

allocation of the downlink DCH channel resources for non-realtime services.

As to claim 4, the prior art of record does not disclose the method according

to claim 1, wherein the respective user states in said step b) are determined

as follows: Occupying User: if a downlink DCH is occupied for a time

exceeding T.sub.k,min.sup.DL, while the traffic, flow or channel utilization

ratio or other wireless measurements of the downlink DCH exceeds the

upper limit M.sub.high.sup.DL, a user of the downlink DCH is called an

occupying user; Common Newly-added User: a common newly-added user

is a newly-added user since a non-realtime service user gets an initial access

to a system or performs a handover from other channels to a DCH, the

common newly-added user itself originally having no downlink DCH

resources, and only a downlink DCH in an idle state being allowed to be

allocated to a common newly-added user; and the original uplink and

downlink DCH rates of the common newly-added user being marked as
zero; Handover Newly-added User: a handover newly-added user is a
newly-added user due to a hard handover, a soft handover or a softer
handover from other cells to the present cell, the handover newly-added user
itself having no downlink DCH resources, downlink DCHs in idle and
available states being allowed to be allocated to a handover newly-added
user; Occupied User: a user whose downlink DCH is in an available state is
called an occupied user, wherein when the downlink DCH of the occupied
user is occupied by an occupying user, the occupied user immediately
occupies the original downlink DCH of the occupying user, that is, the
occupying user and the occupied user adopt a channel permutation mode for
a direct rate switching therebetween; Maintenance User: a maintenance user
is a user whose downlink DCH is in a blocked state, wherein the
maintenance user does not occupy downlink DCH channel resources of
other users, and meanwhile, the downlink DCH channel resources of the
maintenance user cannot be occupied by other users either; Macro-diversity
User: a macro-diversity user is a user whose downlink DCH is in a macro-
diversity state, wherein the macro-diversity user does not occupy downlink
DCH resources of other users, and meanwhile, the downlink DCH resources
of the macro-diversity user cannot be occupied by other users either.

As to claim 5, the prior art of record does not disclose the method according to claim 1, wherein further comprising: the step of determining a current downlink DCH available channel set for non-realtime data services on the basis of i) realtime and non-realtime service active users of DCHs in a current cell and downlink load change information, ii) allocation of power and orthogonal variable spreading factor channel codes, or iii) information relating to a handover between a common channel and a dedicated channel, user's initial access and release, and handover user's access and release, wherein the number of DCHs in said DCH available channel set is greater than or equal to the current number of active users for the non-realtime services.

As to claim 8, the prior art of record does not disclose the method according to claim 1, wherein said step c) further comprises: based on downlink loss levels, allocating DCH channel resource allocation queues with different priority levels to users of the different downlink loss levels.

As to claim 12, the prior art of record does not disclose the method according to claim 1, wherein said step c) further comprises dynamically

allocating a DCH with a certain rate to a soft-handover newly-added user through the following sub-steps, said sub-steps comprising: i) arranging said soft-handover newly-added user in the downlink DCH resource allocation queue with the first priority; ii) setting an initial downlink DCH rate of said soft-handover newly-added user to be the same as downlink DCH rates of other wireless links in an active set of said user, and carrying out an uplink and downlink access control discrimination; iii) searching for a downlink DCH for said downlink rate from downlink DCHs in an idle state, and allocating the downlink DCH in the idle state to said soft-handover newly-added user; iv) searching for a downlink DCH for said downlink rate from downlink DCHs in an available state, and allocating the downlink DCH in the available state to said soft-handover newly-added user; v) based on the downlink DCH allocated to said soft-handover newly-added user, allocating an uplink DCH with a corresponding rate to said user; and vi) canceling said soft-handover newly-added user from the allocation queue with the first priority.

As to claim 16, the prior art of record does not disclose the method according to claim 1, wherein said step c) further comprises dynamically allocating a DCH with a certain rate to a hard-handover newly-added user

through the following sub-steps, said sub-steps comprising: i) arranging said hard-handover newly-added user in the downlink DCH resource allocation queue with the first priority; ii) setting a downlink DCH rate of said hard-handover newly-added user to be the same as its original downlink DCH rate, and carrying out a downlink access control discrimination; iii) determining whether a value allowed by the uplink access control and being equal to or smaller than an original uplink DCH rate of the hard-handover newly-added user can be found in an uplink DCH rate value domain corresponding to a downlink DCH with the downlink DCH rate; iv) searching for a downlink DCH for said downlink rate from downlink DCHs in an idle state, and allocating the downlink DCH in the idle state to said hard-handover newly-added user; v) searching for a downlink DCH for said downlink rate from downlink DCHs in an available state, and allocating the downlink DCH in the available state to said hard-handover newly-added user; vi) based on the downlink DCH allocated to said soft-handover newly-added user, allocating an uplink DCH with a corresponding rate to said user; and vii) canceling said hard-handover newly-added user from the allocation queue with the first priority.

As to claim 21, the prior art of record does not disclose the method according to claim 1, wherein said step c) further comprises dynamically allocating a DCH with a certain rate to a common newly-added user through the following sub-steps, said sub-steps comprising: i) arranging said common newly-added user in the downlink DCH resource allocation queue with a second priority; ii) determining whether there exists a downlink DCH in an idle state and allowed by the access control, and allocating the downlink DCH to said common newly-added user; iii) determining whether there is an uplink rate allowed by the uplink access control within a value domain range of an uplink DCH rate corresponding to said downlink DCH rate, and allocating the maximum of the uplink DCH rate allowed by the uplink access control to said common newly-added user; and iv) canceling said common newly-added user from the allocation queue with the second priority.

As to claim 24, the prior art of record does not disclose the method according to claim 1, wherein said step c) further comprises dynamically allocating a DCH with a certain rate to an occupying user through the following sub-steps, said sub-steps comprising: i) arranging said occupying user in the downlink DCH resource allocation queue with the second

priority; ii) determining whether there exists a downlink DCH in an idle

state allowed by the downlink access control and having a rate higher than

an original downlink rate of said occupying user, and allocating the high-rate

downlink DCH to said occupying user; iii) determining whether there exists

a downlink DCH in an available state allowed by the downlink access

control and having a rate higher than the original downlink rate of said

occupying user, and allocating the high-rate downlink DCH to said

occupying user; iv) determining whether the value domain range of the

uplink DCH rate corresponding to a rate of the high-rate downlink DCH

contains an original uplink DCH rate of said occupying user, and setting the

uplink DCH rate of said occupying user as its uplink rate; and v) canceling

said occupying user from the allocation queue with the second priority.

As to claim 30, the prior art of record does not disclose the method

according to claim 1, wherein further comprising: the step of starting a timer

for timing downlink DCH occupancy after a DCH is allocated, and the step

of determining a state of said DCH by comparing said timer with the

predetermined downlink DCH maximum occupancy time

$T.sub.k,max.sup.DL$ and minimum occupancy time $T.sub.k,min.sup.DL$, in

combination with the comparison between wireless measurements of said

DCH and the lower limit M.sub.low.sup.UL of the wireless measurements.

Dependent claims are allowed by virtue of dependency in independent

claims.

Conclusion

Any inquiry concerning this communication or earlier

communications from the examiner should be directed to PHUOC H. DOAN

whose telephone number is 571-272-7920. The examiner can normally be

reached on 9:30 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, VINCENT HARPER can be reached on 571-272-

7605. The fax phone number for the organization where this application or

proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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05/19/08